

Flare 8 Root Cause And Corrective Action Analysis Report – NSPS Ja

February 28, 2021 through March 5 2021

In accordance with Title 40, Part 60, Subpart Ja, provided below is information related to the discharge to the No. 8 Flare in excess of 500lbs in a 24-hour period in accordance with §60.103a(c) and the recordkeeping and reporting requirements of 40 C.F.R. §60.108a(c)(6). This report also includes information required under the Consent Decree entered in United States, et al. v. HOVENSA, LLC, Civ. No. 1:11-cv-0006.

a. A description of the discharge [40 CFR §60.108a(c)(6)(i)]

High levels of H₂S were observed at Flare 8 header between February 28 and March 5. Several events occurred in the refinery during this time period which impacted the H₂S in Flare 8.

- After conducting a field survey, it was discovered that valve PV 331 at the No. 6 Distillate Desulfurizer (DD6) Unit was passing to Flare 8.*
- DD6 lost H₂ flow to the reactors on March 1 at approximately 10:15AM. The unit was secured and the reactors cooled down using the appropriate shutdown procedures. The recycle gas scrubber was shutdown. As the DD6 makeup interstage and suction drums depressured, the sulfur in the flare header increased.*
- During the attempts to restart DD6, the makeup suction drum relief valve (PSV214) opened to Flare 8 due to high pressure multiple times from March 2-4, increasing the H₂S and TRS content in the flare header. The makeup suction drum contained H₂S since the recycle gas scrubber had not yet been restarted.*
- DD6 low pressure flash drum PSV164 and PSV165 opened to Flare 8 on March 2 7:30PM increasing the sulfur in the flare header.*
- No. 2 Gas Recovery Unit (GRU) compressors were offline during this time period. From March 3-4, the pressure control valves (4850PY0516B and C) opened multiple times to the flare in order to maintain pressure control on the header due to increased flow. The pressure control valves were working properly. The valves closed when GRU compressor started up at 5:20PM on March 4.*

b. The date and time the discharge was first identified and the duration of the discharge [40 CFR §60.108a(c)(6)(ii)] & [Consent Decree Paragraph 60.a]

The discharge was first identified on February 28, at 2:00 hours and lasted until March 5, 2021 at 7:59 hours. The discharge lasted for 126 hours.

c. The measured or calculated cumulative quantity of gas discharged over the discharge duration. Include measured H₂S, Total sulfur, SO₂, and flow rate as applicable. [40 CFR §60.108a(c)(6)(iii)-(vii)] and calculations used to determine the quantity of SO₂ that was emitted. [Consent Decree Paragraph 60.b]

Appendix 1 to this document includes the data recorded by the data acquisition and handling system related to the continuous monitoring system located at Flare 8. SO₂ emissions are calculated using

the total reduced sulfur quantity measured by analyzer in the flare header, the total flow to the flare, and a 99% conversion of total sulfur to SO₂ per 40 CFR §60.108a(c)(6)(vii.)

- d. The steps taken to limit the emissions during the discharge and the duration of the discharge. [40 CFR §60.108a(c)(6)(viii)] and [Consent Decree Paragraph 60.c]

Following the field survey and the discovery of PV 331 failure at 6DD, Operations installed a blind to block the flow from the line to Flare 8 until the valve could be safely removed for repair.

The duration of the event was 126 hours as described in “b” and “c” above.

- e. The root cause analysis and corrective action analysis including an identification of the affected facility, the date and duration of the discharge, a statement noting whether the discharge resulted from the same root cause(s) identified in a previous analysis and either a description of the recommended corrective action(s) or an explanation of why corrective action is not necessary. [40 CFR §60.108a(c)(6)(ix)] and [Consent Decree Paragraph 60.d]

1. *H₂S and other sulfur species were released to Flare 8 from the 6DD.*
2. *The release occurred from Flare 8, an affected facility under NSPS, Subpart Ja.*
3. *The duration of the event was 126 hours as described in “b” and “c” above.*
4. *This discharge resulted from a similar root cause identified in a previous analysis on January 9, 2021.*
5. *The root cause analysis:*

| <i>Root Cause Analysis</i> | <i>Corrective Action Analysis (or explanation that no corrective is necessary)</i> | <i>Status: completed within 45 days or schedule with proposed implementation and completion dates</i> |
|---|---|---|
| <i>H₂S and other sulfur species were released to Flare 8 from the 6DD</i> | <ul style="list-style-type: none"> <i>Line from PV 331 to Flare 8 was initially blinded upon discovery.</i> <i>6DD unit was shut down on and valve was safely removed and serviced.</i> | <i>Completed within 45 days</i> |
| <i>The DD6 makeup interstage and suction drums depressured to the flare during shutdown of DD6</i> | <ul style="list-style-type: none"> <i>Procedures were followed, no corrective action necessary</i> | |
| <i>During restart of DD6, the makeup suction drum relief valve (PSV214) and low pressure flash drum PSV164 and PSV165 opened to Flare 8</i> | <ul style="list-style-type: none"> <i>Procedures were followed, no corrective action necessary</i> | |
| <i>No. 2 Gas Recovery Unit (GRU) compressors were offline during this time</i> | <ul style="list-style-type: none"> <i>The pressure control valves were working properly. The valves closed when GRU compressor</i> | |

| | | |
|---|----------------------------------|--|
| period. From March 3-4, the pressure control valves (4850PY0516B and C) opened multiple times to the flare in order to maintain pressure control on the header due to increased flow. | started up at 5:20PM on March 4. | |
|---|----------------------------------|--|

- f. An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of the discharge resulting from the same root cause or significant contributing causes in the future. The analysis shall discuss all reasonable alternatives, if any, that are available, the probable effectiveness and cost of the alternatives, and whether an outside consultant should be retained to assist in the analysis. Possible design, operation and maintenance changes shall be evaluated. [Consent Decree Paragraph 60.e]

See "e" above. No other analysis were performed.

- g. For Acid Gas Flaring Incidents (not Hydrocarbon Flaring Incidents), specifically identify each of the grounds for stipulated penalties in paragraphs 63, 64 and 65 and describe whether the Incident falls under any of those grounds. [Consent Decree Paragraph 60.f]

The event was not an acid gas flaring event.

- h. For any corrective action analysis for which corrective actions are required, a description of the corrective action(s) completed within the first 45 days following the discharge and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates. [40 CFR §60.108a(c)(6)(x)] and [Consent Decree Paragraph 60.h for supplement report]

See response to "e" above.

- i. If the analysis determines that corrective action is not required, the report shall explain the basis for that conclusion. [Consent Decree Paragraph 60.e]

See response to "e" above.

- j. For each discharge from a flare that is the result of a planned startup or shutdown of a refinery process unit or ancillary equipment connected to the flare, a statement that a root cause analysis and corrective action analysis are not necessary because the owner or operator followed the flare management plan. [40 CFR §60.108a(c)(6)(xi)]

Not applicable.

Appendix 1 - DAHS Records

CONFIDENTIAL

RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 02/28/2021 00:00 Through 03/05/2021 23:59

| Source Parameter (Unit) | | FLARE08 | | | | | | | |
|-----------------------------------|-------|--------------------------|--------------------------|-------------------------|-------------------------|-------------------------|---------------------------|---------------------------|---------------------------|
| | | H2SPPMD (PPM) 001H | H2SPPMD (PPM) 003H | TRSPPM (PPM) 001H | SO2LBS (PPM) 001H | SO2LBS (LBS) 024H | VG_FLOWT (SCF) 001H | VG_FLOWT (SCF) 024H | PLT4FLWT (SCF) 001H |
| | | | 162 | | | 500 | | 1000000 | |
| 02/28/21 | 00:00 | 427.2 | 416.4E | 453.4 | 24.5 | 468.2 | 328,198.8 | 7,120,476.5E | 312,979.1 |
| 02/28/21 | 01:00 | 510.0 | 465.8E | 551.1 | 29.1 | 492.0 | 320,236.6 | 7,230,107.1E | 301,334.3 |
| 02/28/21 | 02:00 | 523.6 | 487.0E | 551.7 | 26.4 | 512.2E | 290,176.9 | 7,244,809.0E | 272,639.4 |
| 02/28/21 | 03:00 | 518.0 | 517.2E | 525.9 | 17.3 | 524.5E | 199,793.4 | 7,204,511.2E | 9,246.3 |
| 02/28/21 | 04:00 | 357.6 | 466.4E | 379.1 | 11.9 | 527.1E | 189,909.3 | 7,065,914.3E | 177,478.2 |
| 02/28/21 | 05:00 | 367.3C | 414.3E | 404.4C | 24.7 | 540.7E | 371,549.2 | 7,047,673.8E | 353,043.6 |
| 02/28/21 | 06:00 | 467.5C | 397.5E | 503.3C | 35.1 | 557.9E | 423,111.7 | 6,968,301.3E | 407,329.1 |
| 02/28/21 | 07:00 | 621.1 | 485.3E | 647.8 | 44.0 | 579.2E | 412,656.1 | 6,967,812.4E | 397,848.0 |
| 02/28/21 | 08:00 | 528.3 | 538.9E | 567.2 | 49.0 | 603.7E | 524,342.5 | 6,992,849.8E | 508,243.8 |
| 02/28/21 | 09:00 | 465.6 | 538.3E | 524.2 | 48.4 | 637.5E | 560,822.3 | 7,255,376.7E | 538,684.6 |
| 02/28/21 | 10:00 | 554.3 | 516.1E | 615.9 | 64.0 | 681.4E | 631,439.3 | 7,652,658.4E | 607,354.3 |
| 02/28/21 | 11:00 | 531.1 | 517.0E | 603.4 | 61.2 | 711.5E | 616,252.6 | 7,860,817.2E | 594,423.8 |
| 02/28/21 | 12:00 | 577.9 | 554.4E | 657.7 | 67.8 | 749.2E | 626,176.4 | 8,218,747.9E | 606,813.3 |
| 02/28/21 | 13:00 | 730.9 | 613.3E | 802.1 | 74.7 | 795.6E | 565,978.3 | 8,456,368.2E | 544,582.1 |
| 02/28/21 | 14:00 | 677.5 | 662.1E | 749.6 | 68.4 | 846.7E | 554,043.0 | 8,866,451.3E | 528,192.5 |
| 02/28/21 | 15:00 | 582.0 | 663.5E | 668.8 | 57.4 | 882.9E | 521,700.7 | 9,226,173.9E | 493,103.7 |
| 02/28/21 | 16:00 | 637.9 | 632.5E | 714.1 | 59.0 | 921.7E | 502,040.5 | 9,552,733.0E | 474,308.1 |
| 02/28/21 | 17:00 | 773.5 | 664.5E | 825.4 | 54.0 | 954.9E | 397,269.9 | 9,742,216.0E | 375,722.5 |
| 02/28/21 | 18:00 | 1,129.8 | 847.1E | 1,140.5 | 56.4 | 983.7E | 300,253.2 | 9,796,414.2E | 284,922.0 |
| 02/28/21 | 19:00 | 907.6 | 937.0E | 923.7 | 49.9 | 1,012.3E | 328,024.9 | 9,889,137.0E | 314,071.7 |
| 02/28/21 | 20:00 | 820.7 | 952.7E | 841.0 | 54.1 | 1,047.4E | 390,852.4 | 10,029,718.1E | 379,311.9 |
| 02/28/21 | 21:00 | 898.5 | 875.6E | 913.9 | 58.7 | 1,085.7E | 389,931.2 | 10,148,752.5E | 379,607.4 |
| 02/28/21 | 22:00 | 98.8 | 606.0E | 169.8 | 12.7 | 1,070.0E | 454,343.6 | 10,165,249.2E | 447,212.0 |
| 02/28/21 | 23:00 | 81.1 | 359.4E | 165.4 | 9.5 | 1,058.0E | 348,297.0* | 10,247,399.9E | 356,531.3 |

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U - Startup
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Report Version 3.17.0000

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CR#: 032_00_03

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RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 02/28/2021 00:00 Through 03/05/2021 23:59

| | | | | | | | | | |
|----------|-------|--------|--------|--------|------|----------|------------|---------------|-----------|
| 03/01/21 | 00:00 | 336.9 | 172.3E | 413.5 | 33.5 | 1,067.1E | 492,804.4* | 10,412,005.5E | 507,177.0 |
| 03/01/21 | 01:00 | 691.7 | 369.9E | 741.4 | 62.9 | 1,100.9E | 515,461.1* | 10,607,230.0E | 519,208.6 |
| 03/01/21 | 02:00 | 581.4 | 536.7E | 638.4 | 54.7 | 1,129.3E | 520,362.1* | 10,837,415.2E | 524,395.5 |
| 03/01/21 | 03:00 | 532.0 | 601.7E | 593.2 | 51.8 | 1,163.7E | 530,008.5* | 11,167,630.3E | 531,663.4 |
| 03/01/21 | 04:00 | 525.8 | 546.4E | 582.6 | 51.5 | 1,203.4E | 537,160.8* | 11,514,881.8E | 546,464.9 |
| 03/01/21 | 05:00 | 547.9C | 535.2E | 606.1C | 53.2 | 1,231.9E | 533,311.5* | 11,676,644.1E | 546,649.8 |
| 03/01/21 | 06:00 | 672.2C | 582.0E | 729.3C | 67.7 | 1,264.5E | 564,186.2* | 11,817,718.6E | 573,659.0 |
| 03/01/21 | 07:00 | 786.1 | 668.7E | 839.1 | 76.4 | 1,296.9E | 552,749.6* | 11,957,812.1E | 558,486.0 |
| 03/01/21 | 08:00 | 767.5 | 741.9E | 819.6 | 78.2 | 1,326.1E | 579,259.4* | 12,012,729.0E | 581,161.5 |
| 03/01/21 | 09:00 | 721.4 | 758.3E | 785.0 | 78.5 | 1,356.2E | 607,442.7* | 12,059,349.4E | 613,644.8 |
| 03/01/21 | 10:00 | 723.5 | 737.5E | 782.6 | 91.0 | 1,383.2E | 706,619.3* | 12,134,529.3E | 717,120.4 |
| 03/01/21 | 11:00 | 178.6 | 541.2E | 272.4 | 36.5 | 1,358.5E | 814,814.8* | 12,333,091.5E | 823,268.0 |
| 03/01/21 | 12:00 | 485.2 | 462.4E | 570.1 | 75.2 | 1,366.0E | 801,816.1* | 12,508,731.3E | 808,741.3 |
| 03/01/21 | 13:00 | 627.5 | 430.4E | 705.9 | 98.6 | 1,389.8E | 848,363.8* | 12,791,116.7E | 858,112.9 |
| 03/01/21 | 14:00 | 369.9 | 494.2E | 465.5 | 65.6 | 1,387.1E | 856,371.0* | 13,093,444.8E | 868,825.6 |
| 03/01/21 | 15:00 | 151.6 | 383.0E | 248.5 | 33.3 | 1,362.9E | 814,286.8* | 13,386,030.9E | 827,805.5 |
| 03/01/21 | 16:00 | 150.4 | 224.0E | 247.2 | 33.0 | 1,336.9E | 810,954.7* | 13,694,945.0E | 818,393.0 |
| 03/01/21 | 17:00 | 100.7 | 134.2 | 194.8 | 19.7 | 1,302.6E | 612,793.6* | 13,910,468.7E | 614,960.3 |
| 03/01/21 | 18:00 | 116.9 | 122.7 | 206.5 | 26.0 | 1,272.2E | 764,183.7* | 14,374,399.2E | 764,593.6 |
| 03/01/21 | 19:00 | 115.7 | 111.1 | 210.9 | 23.2 | 1,245.5E | 667,119.7* | 14,713,494.0E | 682,834.9 |
| 03/01/21 | 20:00 | 123.4 | 118.7 | 218.5 | 23.7 | 1,215.0E | 657,551.5* | 14,980,193.1E | 681,828.0 |
| 03/01/21 | 21:00 | 125.7 | 121.6 | 224.8 | 22.1 | 1,178.5E | 598,418.9* | 15,188,680.7E | 624,924.9 |
| 03/01/21 | 22:00 | 110.0 | 119.7 | 199.1 | 15.6 | 1,181.4E | 474,824.4* | 15,209,161.5E | 494,373.5 |
| 03/01/21 | 23:00 | 188.7 | 141.4 | 275.6 | 12.4 | 1,184.3E | 272,810.9* | 15,133,675.5E | 274,361.7 |
| 03/02/21 | 00:00 | 325.7 | 208.1E | 390.3 | 22.9 | 1,173.6E | 355,751.1 | 14,996,622.2E | 343,798.1 |
| 03/02/21 | 01:00 | 483.4 | 332.6E | 523.4 | 39.8 | 1,150.5E | 462,478.5 | 14,943,639.5E | 457,110.6 |
| 03/02/21 | 02:00 | 139.2 | 316.1E | 214.7 | 14.9 | 1,110.7E | 422,152.9 | 14,845,430.3E | 412,973.2 |
| 03/02/21 | 03:00 | 114.5 | 245.7E | 195.5 | 13.7 | 1,072.7E | 424,797.2 | 14,740,219.0E | 421,445.2 |
| 03/02/21 | 04:00 | 140.7 | 131.5 | 220.3 | 16.7 | 1,037.8E | 460,258.8 | 14,663,317.0E | 451,543.8 |

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Report Version 3.17.0000

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CR#: 032_00_03

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RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 02/28/2021 00:00 Through 03/05/2021 23:59

| | | | | | | | | | |
|----------|-------|---------|----------|---------|-------|----------|-----------|---------------|-----------|
| 03/02/21 | 05:00 | 183.2C | 146.1 | 257.3C | 19.5 | 1,004.1E | 460,470.9 | 14,590,476.4E | 438,939.4 |
| 03/02/21 | 06:00 | 195.6C | 173.2E | 270.4C | 19.7 | 956.1E | 442,959.3 | 14,469,249.5E | 425,954.6 |
| 03/02/21 | 07:00 | 158.6 | 179.1E | 236.7 | 16.0 | 895.7E | 410,174.1 | 14,326,673.9E | 398,747.7 |
| 03/02/21 | 08:00 | 133.5 | 162.5E | 222.5 | 15.7 | 833.3E | 428,322.0 | 14,175,736.5E | 412,051.2 |
| 03/02/21 | 09:00 | 175.8 | 156.0 | 266.1 | 19.3 | 774.1E | 440,776.0 | 14,009,069.8E | 423,207.0 |
| 03/02/21 | 10:00 | 213.4 | 174.2E | 299.9 | 16.2 | 699.2E | 327,830.0 | 13,630,280.6E | 313,911.0 |
| 03/02/21 | 11:00 | 1,082.6 | 490.6E | 1,099.3 | 80.8 | 743.5E | 446,675.8 | 13,262,141.6E | 377,077.6 |
| 03/02/21 | 12:00 | 1,106.3 | 800.8E | 1,110.2 | 74.9 | 743.1E | 409,588.2 | 12,869,913.7E | 343,555.0 |
| 03/02/21 | 13:00 | 748.8 | 979.3E | 783.3 | 34.4 | 679.0E | 267,152.9 | 12,288,702.9E | 253,238.6 |
| 03/02/21 | 14:00 | 1,142.3 | 999.1E | 1,091.9 | 59.6 | 672.9E | 331,303.2 | 11,763,635.0E | 60,223.7 |
| 03/02/21 | 15:00 | 439.2 | 776.8E | 489.5 | 35.1 | 674.7E | 435,521.3 | 11,384,869.6E | 360,424.3 |
| 03/02/21 | 16:00 | 869.4 | 817.0E | 894.3 | 38.5 | 680.2E | 261,643.3 | 10,835,558.2E | 222,993.7 |
| 03/02/21 | 17:00 | 285.4 | 531.3E | 359.3 | 27.8 | 688.4E | 470,131.1 | 10,692,895.7E | 401,736.7 |
| 03/02/21 | 18:00 | 663.6 | 606.1E | 707.9 | 56.5 | 718.8E | 484,415.5 | 10,413,127.5E | 411,681.5 |
| 03/02/21 | 19:00 | 1,838.8 | 929.3E | 1,777.5 | 100.3 | 796.0E | 342,860.9 | 10,088,868.7E | 286,302.0 |
| 03/02/21 | 20:00 | 1,301.0 | 1,267.8E | 1,281.3 | 90.7 | 863.0E | 429,806.0 | 9,861,123.2E | 358,112.4 |
| 03/02/21 | 21:00 | 1,684.4 | 1,608.1E | 1,648.4 | 106.7 | 947.5E | 393,021.0 | 9,655,725.3E | 329,153.2 |
| 03/02/21 | 22:00 | 1,513.0 | 1,499.4E | 1,488.3 | 102.2 | 1,034.2E | 417,329.7 | 9,598,230.6E | 352,131.4 |
| 03/02/21 | 23:00 | 1,556.5 | 1,584.6E | 1,532.3 | 103.8 | 1,125.7E | 411,691.1 | 9,737,110.7E | 348,697.1 |
| 03/03/21 | 00:00 | 1,364.6 | 1,478.0E | 1,356.2 | 91.4 | 1,194.3E | 409,505.3 | 9,790,865.0E | 344,614.4 |
| 03/03/21 | 01:00 | 957.2 | 1,292.8E | 980.8 | 62.2 | 1,216.6E | 385,210.0 | 9,713,596.5E | 323,236.7 |
| 03/03/21 | 02:00 | 563.8 | 961.9E | 618.4 | 38.1 | 1,239.7E | 373,833.7 | 9,665,277.4E | 313,287.9 |
| 03/03/21 | 03:00 | 413.5 | 644.8E | 480.2 | 29.3 | 1,255.4E | 370,580.4 | 9,611,060.6E | 311,323.3 |
| 03/03/21 | 04:00 | 464.7 | 480.7E | 528.9 | 31.2 | 1,269.9E | 358,663.0 | 9,509,464.8E | 300,505.5 |
| 03/03/21 | 05:00 | 542.1C | 473.5E | 598.2C | 40.1 | 1,290.5E | 407,027.7 | 9,456,021.6E | 340,786.9 |
| 03/03/21 | 06:00 | 645.7C | 550.8E | 705.6C | 51.6 | 1,322.4E | 444,391.1 | 9,457,453.4E | 383,087.3 |
| 03/03/21 | 07:00 | 657.6 | 615.2E | 720.7 | 55.4 | 1,361.8E | 467,124.1 | 9,514,403.5E | 406,172.8 |
| 03/03/21 | 08:00 | 688.1 | 663.8E | 753.9 | 54.9 | 1,401.0E | 442,507.4 | 9,528,588.9E | 383,870.8 |
| 03/03/21 | 09:00 | 672.6 | 672.8E | 746.1 | 54.1 | 1,435.8E | 440,243.0 | 9,528,055.8E | 377,101.3 |

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| | | | | | | | | | |
|----------|-------|---------|--------|---------|------|----------|-----------|---------------|-----------|
| 03/03/21 | 10:00 | 466.1 | 608.9E | 548.6 | 45.0 | 1,464.6E | 498,121.9 | 9,698,347.7E | 375,789.2 |
| 03/03/21 | 11:00 | 111.0 | 416.6E | 220.2 | 18.3 | 1,402.1E | 505,763.6 | 9,757,435.5E | 370,443.7 |
| 03/03/21 | 12:00 | 342.4 | 306.5E | 443.8 | 35.1 | 1,362.3E | 480,163.8 | 9,828,011.1E | 394,115.9 |
| 03/03/21 | 13:00 | 651.1 | 368.2E | 735.0 | 52.3 | 1,380.2E | 432,418.8 | 9,993,277.0E | 350,563.3 |
| 03/03/21 | 14:00 | 695.2 | 562.9E | 763.9 | 67.4 | 1,388.1E | 536,208.8 | 10,198,182.5E | 374,943.1 |
| 03/03/21 | 15:00 | 665.9 | 670.7E | 727.2 | 67.2 | 1,420.1E | 561,002.4 | 10,323,663.6E | 385,850.8 |
| 03/03/21 | 16:00 | 710.0 | 690.4E | 759.5 | 63.0 | 1,444.6E | 503,662.6 | 10,565,682.8E | 366,309.1 |
| 03/03/21 | 17:00 | 796.7 | 724.2E | 836.7 | 45.5 | 1,462.3E | 330,306.5 | 10,425,858.2E | 323,362.7 |
| 03/03/21 | 18:00 | 847.5 | 784.7E | 859.0 | 43.5 | 1,449.3E | 307,432.2 | 10,248,874.9E | 124,263.9 |
| 03/03/21 | 19:00 | 477.8 | 707.3E | 536.1 | 49.3 | 1,398.3E | 558,493.7 | 10,464,507.7E | 400,631.5 |
| 03/03/21 | 20:00 | 284.3 | 536.6E | 371.1 | 30.3 | 1,338.0E | 496,744.6 | 10,531,446.3E | 393,567.6 |
| 03/03/21 | 21:00 | 156.9 | 306.3E | 242.5 | 22.0 | 1,253.3E | 550,029.0 | 10,688,454.4E | 404,254.6 |
| 03/03/21 | 22:00 | 132.1 | 191.1E | 218.2 | 17.3 | 1,168.3E | 482,011.4 | 10,753,136.1E | 373,988.1 |
| 03/03/21 | 23:00 | 128.1 | 139.0 | 210.2 | 16.1 | 1,080.6E | 465,882.0 | 10,807,327.0E | 400,826.4 |
| 03/04/21 | 00:00 | 120.4 | 126.9 | 203.8 | 15.4 | 1,004.6E | 459,641.6 | 10,857,463.3E | 407,987.2 |
| 03/04/21 | 01:00 | 116.1 | 121.5 | 201.3 | 14.7 | 957.1E | 442,584.5 | 10,914,837.8E | 388,597.0 |
| 03/04/21 | 02:00 | 115.6 | 117.3 | 192.9 | 16.1 | 935.1E | 505,877.2 | 11,046,881.3E | 409,213.7 |
| 03/04/21 | 03:00 | 118.6 | 116.8 | 209.4 | 15.3 | 921.1E | 444,199.9 | 11,120,500.8E | 406,255.1 |
| 03/04/21 | 04:00 | 103.6 | 112.6 | 205.5 | 14.2 | 904.0E | 419,020.9 | 11,180,858.6E | 395,065.5 |
| 03/04/21 | 05:00 | 128.3C | 116.8 | 226.5C | 17.6 | 881.6E | 472,690.8 | 11,246,521.7E | 398,826.7 |
| 03/04/21 | 06:00 | 235.6C | 155.8 | 329.3C | 23.0 | 852.9E | 423,633.4 | 11,225,764.0E | 383,498.8 |
| 03/04/21 | 07:00 | 930.9 | 431.6E | 982.8 | 73.6 | 871.1E | 454,967.8 | 11,213,607.6E | 372,485.8 |
| 03/04/21 | 08:00 | 822.5 | 663.0E | 876.2 | 63.7 | 879.9E | 441,789.2 | 11,212,889.4E | 377,514.3 |
| 03/04/21 | 09:00 | 850.8 | 868.1E | 889.7 | 64.8 | 890.6E | 442,242.9 | 11,214,889.4E | 370,680.3 |
| 03/04/21 | 10:00 | 1,202.6 | 958.6E | 1,137.1 | 80.8 | 926.5E | 431,727.0 | 11,148,494.5E | 4,723.2 |
| 03/04/21 | 11:00 | 669.8 | 907.8E | 626.0 | 50.6 | 958.7E | 491,103.0 | 11,133,833.9E | 107.8 |
| 03/04/21 | 12:00 | 649.7 | 840.7E | 632.1 | 37.9 | 961.5E | 364,177.9 | 11,017,848.1E | 21,197.8 |
| 03/04/21 | 13:00 | 1,144.2 | 821.2E | 1,092.7 | 62.0 | 971.2E | 344,671.7 | 10,930,101.0E | 113,566.3 |
| 03/04/21 | 14:00 | 723.6 | 839.2E | 752.3 | 36.7 | 940.5E | 296,036.8 | 10,689,929.0E | 250,199.0 |

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U - Startup
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Report Version 3.17.0000

LBRPCNSV01\reportuser

CR#: 032_00_03

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RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 02/28/2021 00:00 Through 03/05/2021 23:59

| | | | | | | | | | |
|----------|-------|---------|--------|---------|------|--------|-----------|---------------|-----------|
| 03/04/21 | 15:00 | 507.6 | 791.8E | 541.3 | 25.4 | 898.7E | 285,346.7 | 10,414,273.4E | 30,520.3 |
| 03/04/21 | 16:00 | 340.9 | 524.0E | 405.7 | 19.3 | 855.1E | 289,484.0 | 10,200,094.8E | 246,654.6 |
| 03/04/21 | 17:00 | 359.4 | 402.6E | 405.2 | 16.1 | 825.7E | 241,871.4 | 10,111,659.7E | 217,764.2 |
| 03/04/21 | 18:00 | 349.9 | 350.1E | 389.9 | 16.6 | 798.8E | 258,246.4 | 10,062,474.0E | 222,889.4 |
| 03/04/21 | 19:00 | 349.4 | 352.9E | 386.7 | 15.8 | 765.4E | 248,771.0 | 9,752,751.3E | 221,117.7 |
| 03/04/21 | 20:00 | 375.3 | 358.2E | 405.1 | 16.4 | 751.4E | 245,880.6 | 9,501,887.3E | 218,912.3 |
| 03/04/21 | 21:00 | 353.0 | 359.2E | 386.5 | 15.8 | 745.3E | 248,802.3 | 9,200,660.7E | 222,193.2 |
| 03/04/21 | 22:00 | 333.2 | 353.8E | 367.7 | 15.0 | 743.0E | 248,247.6 | 8,966,896.8E | 221,640.5 |
| 03/04/21 | 23:00 | 176.9 | 287.7E | 216.1 | 8.8 | 735.7E | 248,298.5 | 8,749,313.4E | 225,362.8 |
| 03/05/21 | 00:00 | 126.6I | 287.7E | 169.4I | I | 720.3E | 254,178.6 | 8,543,850.4E | 229,967.6 |
| 03/05/21 | 01:00 | 117.2I | 287.7E | 158.8I | I | 705.6E | 244,216.4 | 8,345,482.2E | 219,383.1 |
| 03/05/21 | 02:00 | 134.5I | 287.7E | 171.6I | I | 689.6E | 245,376.3 | 8,084,981.3E | 218,341.5 |
| 03/05/21 | 03:00 | 180.4I | 287.7E | 210.9I | I | 674.3E | 249,378.1 | 7,890,159.5E | 219,855.8 |
| 03/05/21 | 04:00 | 280.0I | 287.7E | 304.8I | I | 660.1E | 252,813.7 | 7,723,952.4E | 220,341.3 |
| 03/05/21 | 05:00 | 175.6IC | 287.7E | 208.1IC | IC | 642.5E | 284,402.3 | 7,535,663.9E | 248,464.7 |
| 03/05/21 | 06:00 | 81.3IC | 287.7E | 131.2IC | IC | 619.5E | 361,767.9 | 7,473,798.4E | 335,854.5 |
| 03/05/21 | 07:00 | 166.7I | 287.7E | 216.6I | I | 545.9E | 359,334.1 | 7,378,164.7E | 357,036.6 |
| 03/05/21 | 08:00 | 214.9I | 287.7E | 253.0I | I | 482.1 | 310,411.4 | 7,246,786.9E | 290,724.7 |
| 03/05/21 | 09:00 | 51.9I | 287.7E | 120.0I | I | 417.4 | 356,917.0 | 7,161,461.1E | 343,960.7 |
| 03/05/21 | 10:00 | 58.8I | 287.7E | 131.1I | I | 336.6 | 383,753.6 | 7,113,487.6E | 374,213.6 |
| 03/05/21 | 11:00 | 125.7I | 287.7E | 637.7I | I | 286.0 | 459,284.1 | 7,081,668.7E | 412,305.1 |
| 03/05/21 | 12:00 | 53.8I | 287.7E | 339.9I | I | 248.1 | 449,702.7 | 7,167,193.5E | 404,963.3 |
| 03/05/21 | 13:00 | 84.0I | 287.7E | 496.2I | I | 186.1 | 451,464.2 | 7,273,986.0E | 404,115.3 |
| 03/05/21 | 14:00 | 110.0I | 287.7E | 168.5I | I | 149.4 | 267,759.5 | 7,245,708.7E | 132,194.4 |
| 03/05/21 | 15:00 | 399.1I* | 287.7E | 390.1I* | I* | 124.0 | 474,976.0 | 7,435,338.0E | 224.2 |
| 03/05/21 | 16:00 | 63.1I | 287.7E | 129.4I | I | 104.6 | 289,283.2 | 7,435,137.1E | 107,327.9 |
| 03/05/21 | 17:00 | 33.0I | 287.7E | 99.0I | I | 88.5 | 279,390.4 | 7,472,656.1E | 50,255.3 |
| 03/05/21 | 18:00 | 115.8I* | 287.7E | 571.4I* | I* | 71.9 | 376,154.4 | 7,590,564.1E | 332,378.7 |
| 03/05/21 | 19:00 | 48.4I* | 287.7E | 138.8I* | I* | 56.1 | 286,024.9 | 7,627,818.0E | 240,048.3 |

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Report Version 3.17.0000

LBRPCNSV01\reportuser

CR#: 032_00_03

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RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 02/28/2021 00:00 Through 03/05/2021 23:59

| | | | | | | | | | |
|----------|-------|---------|--------|-----------|----|------|-----------|--------------|----------|
| 03/05/21 | 20:00 | 368.6I* | 287.7E | 599.0I* | I* | 39.7 | 454,282.2 | 7,836,219.5E | 0.0F |
| 03/05/21 | 21:00 | 346.5I* | 287.7E | 341.3I* | I* | 23.9 | 370,812.8 | 7,958,230.0E | 0.0F |
| 03/05/21 | 22:00 | 715.0I* | 287.7E | 1,050.6I* | I* | 8.8 | 346,770.4 | 8,056,752.9E | 12,978.7 |
| 03/05/21 | 23:00 | 499.5I* | 287.7E | 1,324.1I* | I* | I | 364,803.1 | 8,173,257.5E | 9,170.4 |

CONFIDENTIAL

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D - Shutdown

Report Version 3.17.0000

LBRPCNSV01\reportuser

CR#: 032_00_03

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